Remarks

Reconsideration of the application is respectfully requested in view of the following remarks. Claims 1-23 are pending. Applicants acknowledge with thanks the Examiner's indication that claims 2-4, 7-9 and 11-17 would be allowable if rewritten in independent form.

Specification

Amendment to Specification to Include Priority Claim

The specification of the application is amended herein to include a specific reference to the prior application from which Applicants claim the benefit of an earlier filing date.

Claims

Claim 1

Claim 1 of the application is rejected under 35 U.S.C. 102(e) as being anticipated by Tucker et al, U.S. patent 5,926,406. Applicants respectfully traverse the rejection.

Claim 1 is directed to a method of efficiently converting sensory data between a perceptual data representation and a physical data representation by an expression involving a power function, and comprises in part, "performing a plurality of the computationally less expensive floating point operations," and "combining results of the plural operations to yield an approximation of a result of the power function on the sensory data item." Further, these computationally less expensive floating point operations are in the instruction set of a processor. (Claim 1 recites, "an instruction set including at least a computationally expensive floating point power function and a set of computationally less expensive operations." Tucker fails to teach these elements of claim 1.

Tucker describes a system and method for calculating floating point exponential values in a geometry accelerator, and at col. 11, lines 33-43, describes a number of steps in a method for calculating a^x, where x is a floating point value. At lines 42-43, the following step is taken, "multiply the results of steps 4 and 5 to obtain the final result." Steps 4 and 5 are, respectively, compute $2^{(fraction\ component)}$ using a second look-up table," and "compute $2^{integer}$." The Examiner interprets these steps to teach the claimed language, "combining results of the plural operations to yield an approximation of a result of the power function on the sensory data item."

However, looking up a corresponding value in a look-up table is not a "floating point operation" in the instruction set of a processor as described in claim 1, and therefore Tucker does not teach the elements of claim 1. In other words, the method described in Tucker combines a value obtained using a look-up table ($2^{(fraction\ component)}$) and a computation of $2^{integer}$. Therefore, Tucker describes completing its approximation of a^x by combining the result of a look-up operation and an integer operation. By contrast, claim 1 recites performing a plurality of floating point operations and combining their results to yield an approximation. Because a look-up operation (obtaining a value using a look-up table) is not a floating point operation, Tucker does not suggest "performing a plurality of the computationally less expensive floating point operations," and "combining results of the plural operations to yield an approximation of a result of the power function on the sensory data item."

Therefore, Tucker fails to teach each and every element of claim 1. A rejection under 35 U.S.C. 102(e) is therefore improper and Applicants respectfully request that it be withdrawn.

Claim 5

Claim 5 of the application is rejected under 35 U.S.C. 102(e) as being anticipated by

Tucker et al, U.S. patent 5,926,406. Applicants respectfully traverse the rejection.

Claim 5 depends from claim 1 and therefore contains each and every element of claim 1

in addition to any additional element claim 5 recites. Because Tucker fails to teach each and

every element of claim 1 as explained above, Tucker fails to teach each and every element of

claim 5. A rejection under 35 U.S.C. 102(e) is therefore improper and Applicants respectfully

request that it be withdrawn.

Claim 6

Claim 6 of the application is rejected under 35 U.S.C. 103(a) as being obvious over

Fushiki et al., U.S. patent 6,462,748, in view of Tucker et al, U.S. patent 5,926,406. Applicants

respectfully traverse the rejection.

Claim 6 is directed to an imaging system and comprises in part, "… the

perceptual/physical image converter approximating the power function and the inverse power

function as a weighted mathematical combination of plural computationally inexpensive floating

point operations on items of the image data." Both Tucker and Fushiki fail to teach this element

of claim 6.

As explained with respect to claim 1, Tucker describes a system and method for

calculating floating point exponential values in a geometry accelerator. The Examiner asserts

that col. 11, lines 42-43 teaches the element of claim 6 recited above. Col 11, lines 42-43

describe a number of steps in a method for calculating a^x, where x is a floating point value. At

lines 42-43, the following step is taken, "multiply the results of steps 4 and 5 to obtain the final

result." Steps 4 and 5 are, respectively, compute $2^{(\text{fraction component})}$ using a second look-up table,"

and "compute 2^{integer}." The Examiner interprets these steps to teach the claimed language, "the

perceptual/physical image converter approximating the power function and the inverse power

function as a weighted mathematical combination of plural computationally inexpensive floating

point operations on times of the image data."

Step 4 in Tucker, namely looking up a corresponding value in a look-up table, is not a

"floating point operation." The method described in Tucker combines a value obtained using a

look-up table ($2^{(\text{fraction component})}$) and a computation of 2^{integer}. Therefore, Tucker describes a

mathematical combination of the result of a look-up operation and an integer operation. Claim 6,

by contrast, recites "a weighted combination of plural computationally inexpensive floating point

operations." Tucker therefore fails to teach each and every element of claim 6.

Therefore, Tucker, as well as a combination of Tucker and Fushiki, fails to teach each

and every element of claim 6. A rejection under 35 U.S.C. 103(a) is therefore improper and

Applicants respectfully request that it be withdrawn.

Claims 10 and 18

Claims 10 and 18 of the application are rejected under 35 U.S.C. 103(a) as being obvious

over Fushiki et al., U.S. patent 6,462,748, in view of Tucker et al, U.S. patent 5,926,406.

Applicants respectfully traverse the rejections.

Claim 10 and 18 depend from claim 6 and therefore contain each and every element of

claim 6 in addition to any additional elements recited specifically in claims 10 and 18. Because

a combination of Tucker and Fushiki fails to teach each and every element of claim 6 as

explained above, Tucker fails to teach each and every element of claims 10 and 18. A rejection

under 35 U.S.C. 103(a) is therefore improper and Applicants respectfully request that it be

withdrawn.

Conclusion

The application as currently presented should now be in condition for allowance.

Applicants respectively request such action.

Respectfully submitted,

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